

Week 35
September 2010

NILT Nano Newsletter

Dear Colleagues,

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Stanford researchers Yi Cui, Sarah Heilshorn and colleagues have reported the development a new high speed filter for low cost water purification based on electrified nanostructures - easily implemented to purify water in the developing world. Instead of physically trapping bacteria as most existing filters do the new filter let them through and instead of trapping the bacteria it kills them. Since the new filter does not trap bacteria, it can have much larger pores leading to as much as 80,000 times faster filtering than with filters trapping bacteria and due to the larger pores water can run through the new filter just by the force of gravity and does not require any pumps. The filter material is made by dipping plain cotton cloth into a solution of carbon nanotubes and silver nanowires. The bacteria are killed by a combination of the silver that long has been known to have chemical properties killing bacteria and an electrical field that runs through the highly conductive carbon nanotubes. An added advantage of using silver nanowire is that if any bacteria were to linger, the silver would likely kill it. This avoids biofouling, in which bacteria form a film on a filter. Biofouling is a common problem in filters that use small pores to filter out bacteria. In lab tests, over 98% of Escherichia coli bacteria that were exposed to 20 volts of electricity in the filter for several seconds were killed. The results have been published in Nano Letters. Read this and the 7 other very interesting news below.

Editor, CTO, NIL Technology
Brian Bilenberg



High-Speed Filter uses Electrified Nanostructures to Purify Water at Low Cost

By dipping plain cotton cloth in a high-tech broth full of silver nanowires and carbon nanotubes, Stanford researchers have developed a new high-speed, low-cost filter that could easily be implemented to purify water in the developing world.

[\[RDmag.com\]](http://RDmag.com)



Semiconductor Nanocrystals make Ideal Optical Thermometers

Chemists at the University of Washington in Seattle have made a new class of highly sensitive optical thermometer using doped semiconductor nanocrystals. The device works via a fundamentally new photoluminescence mechanism, never before described.

[\[Nanotechweb.org\]](http://Nanotechweb.org)

Highly Efficient Light Extraction from Semiconductors Promises Better LEDs



One of the biggest challenges in creating a better light-emitting diode (LED) is the search for a way to efficiently extract the light generated in the semiconductor device into the surrounding air, while avoiding the internal light reflection that is cause for a considerable waste of energy. A team of Japanese researchers have recently managed to achieve just that, in what is believed to be a huge step toward significantly more energy-efficient LEDs.

[Gizmag.com]

NILT[®] Microlens Array Standard Stamp

New Size and New Price

Type A, active area of 50 mm x 50 mm

Type B, active area of 100 mm x 100 mm

Price EUR 3,500

Price EUR 6,000



Nano Switches that Store More Data Head to Market

An electronic component that offers a new way to squeeze more data into computers and portable gadgets is set to go into production in just a couple of years. Hewlett-Packard announced today that it has entered an agreement with the Korean electronics manufacturer Hynix Semiconductor to make the components, called "memristors," starting in 2013.

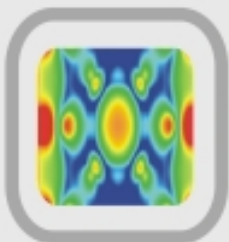
[Technologyreview.com]



Nanotechnology to Net Mosquitoes

The National Nanotechnology Centre (Nanotec) yesterday unveiled its latest invention, a nanofibre net that can kill malariacarrying mosquitoes within six minutes of their contact with it.

[Nationmultimedia.com]



Prediction of Intrinsic Magnetism at Silicon Surfaces could lead to Single-Spin Magnetoelectronics

The integration of single-spin magnetoelectronics into standard silicon technology may soon be possible, if experiments confirm a new theoretical prediction by physicists at the Naval Research Laboratory and the University of Wisconsin-Madison.

[Sciencedaily.com]

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Electron Beam Lithography Service

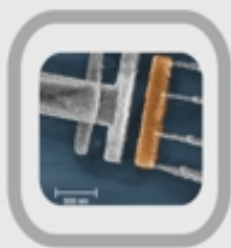
Gaussian and variable shaped EBL systems

Sub-20 nm patterning

Spin coating

Dry etching

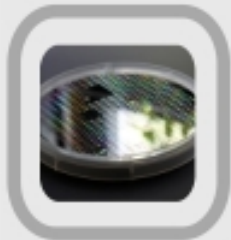
Thin film deposition



Rice University and Privatran developing Sub-10nm Memory Technology

Privatran, a Texas start-up, is using technology developed at Rice University in Texas to develop memories using 5nm nanowires, according to Nano Letters.

[Electronicsweekly.com]



Nanotech Display would be 8X Denser than iPhone 4's

A team of engineers at the University of Michigan has created an ultra high-definition display that can display a logo of the school that is just nine microns tall.

[Electronista.com]

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100 nm

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